

Consultation on a draft strategy on protecting and improving the health of honey bees in England and Wales

Produced in consultation with the Bee Farmers' Association of the United Kingdom, the British Beekeepers' Association, the Welsh Beekeepers' Association, Council of the National Beekeeping Associations in the United Kingdom, Bee Diseases Insurance Ltd, Bee Improvement and Bee Breeders' Association, The CB Dennis British Beekeepers Research Trust, the National Diploma in Beekeeping, the Commercial Queen Rearers' Association and the National Bee Unit

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Executive summary

Honey bees contribute directly to local food production in the UK and make an important contribution, through pollination, to crop production. They face a growing number of threats from pests and diseases.

This draft strategy seeks to address the challenges facing beekeepers given their important role as custodians of honey bees. It sets out a plan for the future direction of work aimed at sustaining the health of honey bees and beekeeping in England and Wales for the next decade. Five key outcomes provide the focus for future action by both Government and other stakeholders, including, most importantly, individual beekeepers. These five outcomes capture what we, as stakeholders, are looking to achieve:

- (1) Effective communications and relationships operate at all levels;
- (2) Effective biosecurity at all levels minimises risks from pests, diseases and undesirable species;
- (3) Good standards of beekeeping and husbandry minimise pest and disease risks and contribute to sustaining honey bee populations – prevention is better than cure;
- (4) Impacts from pests, diseases and other hazards are kept to the lowest levels achievable; and,
- (5) Sound science and evidence underpins bee health policy and its implementation.

The strategy also identifies the roles and responsibilities of the different stakeholders in meeting the aim and achieving the outcomes. It recognises that whilst Government has a distinct role to play as a key stakeholder, beekeepers, their associations¹ and other stakeholders are important too. The strategy is only likely to succeed if all parties accept their respective roles and responsibilities and work together in a pragmatic and constructive way.

The diagram below presents an overview of the strategy including the aim, outcomes and the proposed initiatives and activities for Government and other stakeholders. Specific more detailed work plans will be developed by Government and other stakeholders and put into action once the strategy has been finalised.

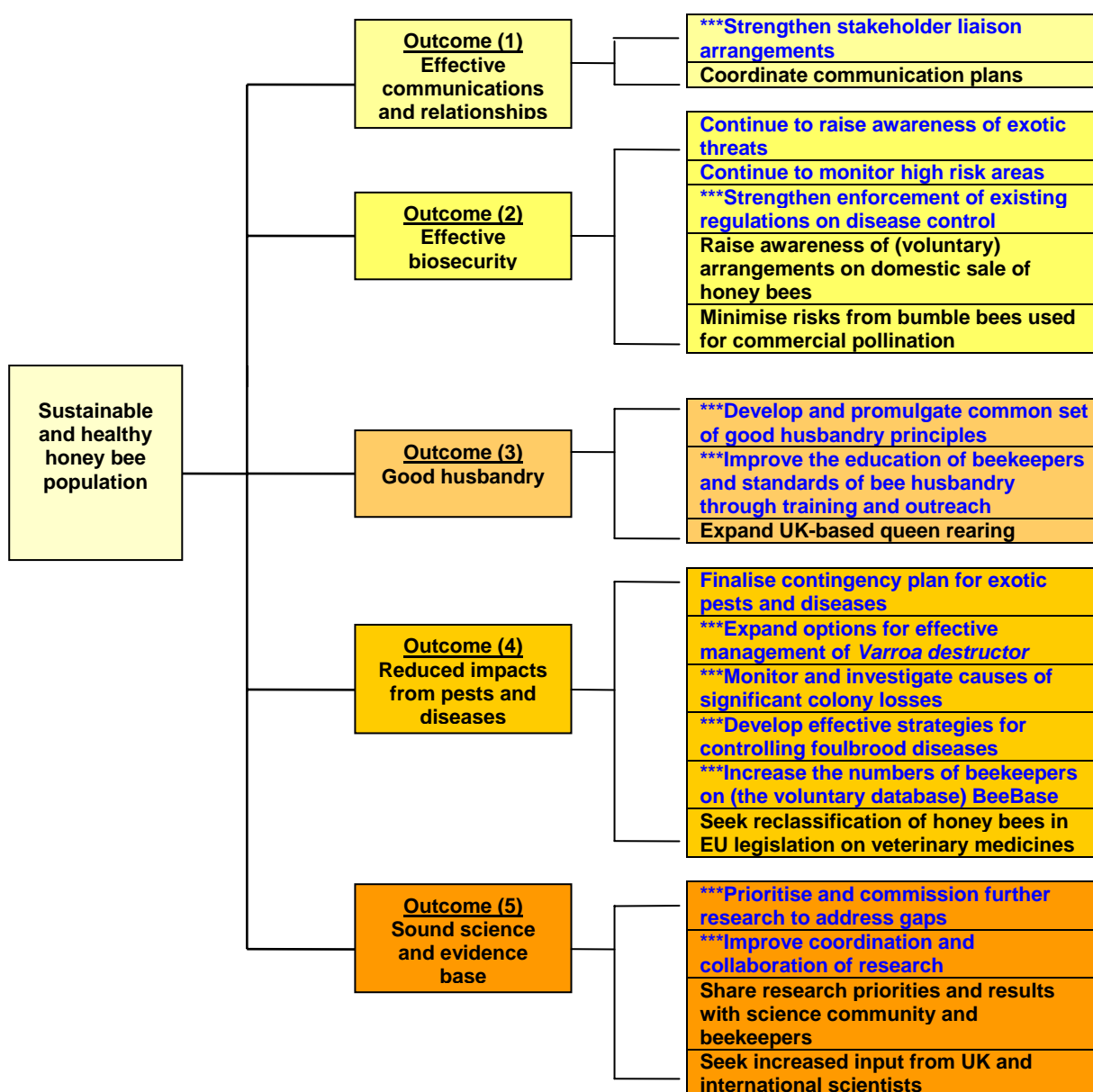
We cannot tackle everything at once and therefore delivery will not be quick. Hence, the diagram below also highlights (in blue) particular priorities agreed by stakeholders for the short term, including ongoing and (highlighted with ***) new or enhanced activities. The other activities shown in the diagram should be addressed over the medium or longer term.

¹ Beekeeping associations in the strategy usually refers to those at national level including the Bee Farmers' Association, the British Beekeepers' Association, the Welsh Beekeepers Association, Council of the National Beekeeping Associations, Bee Improvement and Bee Breeders' Association and Bee Diseases Insurance Ltd.

Publication of the strategy is not an end in itself – it marks the beginning of further detailed work of Government with other stakeholders to develop specific activities and initiatives, to review regularly progress towards achieving the aim and outcomes and to identify further priorities and actions where appropriate. Government in consultation with other stakeholders will manage the strategy through an appropriate project management structure and by developing relevant indicators against which progress toward achieving the desired aim and outcomes can be monitored.

Overview of strategy on protecting and improving the health of honey bees

Aim (from Chapter 1)	Outcomes (from Chapter 3)	Proposed initiatives and activities (from Part 2)
		Blue denotes priorities for short term including new or enhanced priorities highlighted with ***



Further details of the proposed [new or enhanced priority activities](#) for the short term are as follows:

- Defra and WAG, beekeeping associations and other stakeholders will work together to **review and strengthen existing liaison arrangements between all stakeholders**, including establishing arrangements to manage implementation of the strategy.
- The National Bee Unit (NBU) will ensure that, whilst continuing to apply the principles of good regulatory practice, Bee Inspectors are trained in evidence gathering and **effective enforcement of current statutory requirements in relation to disease control**, including regulations on the import of honey bees.
- The NBU and national associations will work together to **develop and promulgate a common set of good husbandry principles**, to include regular monitoring of colonies and apiary health planning.
- National associations, those responsible for the National Diploma in Beekeeping and the NBU will work together on a crucial element of the strategy – improving the education of beekeepers; this will focus on improving standards of bee husbandry through **coordinating and streamlining education and training programmes, outreach initiatives and examinations**.
- Defra, WAG and the NBU will work with beekeeping associations and other stakeholders to **expand options for the effective management of *Varroa destructor* and its associated viruses, including authorisation of additional treatments and their sustainable use through integrated pest management**.
- The NBU will monitor colony losses and **will investigate, as a high priority**, the causes of losses considered to be significant (to be assessed by initial screening by York NBU staff in consultation with the National and Regional Bee Inspectors).
- Defra, WAG and the NBU will work with beekeeping associations to **develop effective strategies for controlling foulbrood diseases** with the aim of reducing incidence to the lowest levels achievable.
- The NBU, beekeeping associations and suppliers will work together to develop an agreed approach to **increase the numbers of beekeepers on the voluntary national database (BeeBase) given its key role in communication and disease control**.
- Defra and WAG, in consultation with beekeeping associations, will **prioritise and commission further research to address gaps in the science and evidence base, based on a robust assessment of needs, in order to support policy development and operations**.

- Defra, WAG, other funding bodies and beekeeping associations will work together to **improve research coordination and collaboration of research.**

Overview of chapters

Part 1

Chapter 1 - Introduction

sets out the strategy's overall aim, some background to the challenges faced by beekeepers, the scope of the strategy and how it would contribute to Defra and WAG's wider objectives.

Chapter 2 - Roles and responsibilities of stakeholders

describes the contributions made by Government and other stakeholders to improving honey bee health and sustainability.

Chapter 3 - Outcomes

sets out the five outcomes we need to achieve to secure the aim of a healthy and sustainable population of honey bees. It also includes a more detailed summary diagram of the strategy.

Chapter 4 – Managing implementation of the strategy

presents initial thoughts on managing implementation of the strategy and reviewing progress.

Part 2

Towards implementation

provides further details on the proposed initiatives and activities during the implementation phase necessary for realising the strategy's aim and outcomes.

The strategy also includes a number of annexes (listed in table of contents)

Part 1

Strategy

Chapter 1

Introduction

Aim

1. The overall aim of the strategy is:

- To achieve a sustainable and healthy population of honey bees for pollination and honey production in England and Wales via strengthened partnership working between Government and other stakeholders.

2. The Government has supported a programme to protect the health of honey bees (*Apis mellifera*) since 1942 in response to high incidence of American Foulbrood disease which had significant impacts on the viability of managed colonies. Honey bees continue to face threats to their health and sustainability. Varroa mites and associated viruses have been a significant risk over recent years leading to losses in honey bee colonies in many areas. Beekeepers, as important custodians of honey bees, face particular challenges in controlling this pest due to limited effective treatments.

3. This strategy confirms the Government's ongoing commitment to protecting and improving the health of honey bees and to sustaining and supporting beekeeping for today and for future generations. It seeks to address the challenges facing beekeepers. In particular, it sets out:

- outcomes, activities and priorities for protecting and improving the health of honey bees in England and Wales; and
- the relative roles and responsibilities of government and other stakeholders in achieving these objectives.

4. The intention is to provide direction and focus for Government, beekeepers and other stakeholders to work together for the next decade on sustaining honey bees. Specific and detailed work plans will be developed and implemented in consultation with other stakeholders following publication of the strategy. Initial proposals on initiatives and activities for future work plans are set out in Part 2.

5. Strengthened partnership working between Government, beekeepers and other stakeholders is seen as crucial in achieving the strategy's aim and outcomes, and will help ensure that both current and evolving threats to bee health are effectively identified, assessed and acted upon.

6. It is not the intention of the strategy to change existing basic policy on bee health and the associated inspection service provided by the National Bee Unit (NBU). In particular, there is a well established framework of domestic and international legislation (summarised at Annex A) and other agreements (such as the OIE's 2007 International Terrestrial Animal Health Code which

includes advice on hygiene and disease security procedures in apiaries) within which Defra and WAG will continue to work. In addition, the EC's apiculture programme seeks to sustain production and marketing of apiculture products at current levels of quality and competitiveness.

The challenge

Honey bees, pests and diseases

7. Honey bees contribute directly to sustainable local food production and more broadly, through pollination, to crop production.
8. They are susceptible to pests and diseases, the likelihood and/or consequences of which have increased significantly in the UK over the last 5 to 10 years. Current widespread risks include American Foulbrood and European Foulbrood (which are subject to statutory controls), and varroa mites and associated viruses. Colony losses due to varroa infestation have increased since 2001 due to the mites developing resistance to available pyrethroid varroacides. In addition, there are few alternative approved treatments. Potential exotic risks include the small hive beetle (*Aethina tumida*), or SHB, parasitic brood mites (*Tropilaelaps* species) and undesirable species such as the Asian hornet which preys on colonies. A short overview of these risks is at Annex B.
9. The management of pests and diseases to the lowest levels achievable, in particular through integrated pest management, is necessary in order to reduce the risk of further spread to nearby apiaries and to minimise losses to honey production. It is also necessary to sustain the role of honey bees in pollinating crops.

Beekeeping

10. The craft of beekeeping plays a significant role in the survival of honey bees in the UK. It is pursued by some 200-300 commercial beekeepers who depend on beekeeping for all or part of their income, but it is dominated by some 44,000² beekeepers who pursue the craft as a hobby. Although difficult to assess, it is widely recognised that the economic value of honey bees as crop pollinators is much greater than their value as honey and wax producers. (Annex B also provides further background information on beekeeping).
11. The dominance of non-commercial beekeepers presents particular challenges for safeguarding bee health. Without specialist support their investment in the required measures to promote or manage bee health or to collaborate effectively with other beekeepers to address common problems is likely to be limited. These difficulties are compounded because many beekeepers are not members of any beekeeping associations making them difficult to reach. Furthermore, the beekeeping associations have limited resources and capacity to do more.

² Derived from ADAS report July 2001- An economic evaluation of Defra's bee health programme. However, this is likely to be an over-estimate as there are uncertainties about the numbers involved.

12. As a result of these challenges, concerted initiatives and actions to sustain honey bees, such as reducing national levels of pests and diseases or detecting and eradicating exotic pests and diseases, are difficult to undertake and unlikely to be effective without government support. At the very least, government support is needed to maintain uniform standards of disease control and enforcement.

Scope

13. This strategy is concerned with protecting and improving the health of honey bees which are managed for honey production and/or for pollination of food and non-food crops³.

14. The health of bees, in the context of the strategy, is concerned with anything that potentially harms honey bees, including bacteria, viruses, arachnids (e.g mites), insects, fungi and other pathogens which cause disease or feed on bees, as well as adverse effects caused by other threats such as undesirable species that prey on colonies, pesticides and habitat loss.

15. The strategy does not cover the broader stewardship of other species of bees or specific policies and initiatives on conservation and biodiversity as these are addressed as part of Government's broader remit for, and policies on the environment. For example, the Government's Biodiversity Action Plans include species protection plans for several species of bumble bee.

16. Other policy areas relevant to managing the health of honey bees include food safety controls (regulations on residues in honey from pesticides and medications) and veterinary medicines controls. While these areas are outside the strategy's scope, liaison and close co-operation with the relevant lead agencies is necessary to achieve the outcomes.

17. Subject to appropriate country variations, the strategy is intended to cover England and Wales.

Contribution to Defra's Strategic Objectives and Public Service Agreements⁴

18. The strategy will contribute to two of Defra's eight Departmental Strategic Objectives for 2008-2011:

- A thriving farming and food sector with an improving net environmental impact.
- A healthy, resilient, productive and diverse natural environment.

19. The strategy will also contribute towards the delivery of the Government's cross-departmental Public Services Agreement for the natural environment:

³ For example, oil seed rape used for production of biodiesel

⁴ Reference - <http://defraweb/corporate/busplan/spending-review/psa2007.htm>

- “to secure a diverse, healthy and resilient natural environment, which provides the basis for everyone’s well-being, health and prosperity now and in the future; and where the value of the services provided by the natural environment are reflected in decision-making”.

Preparation

20. Defra and WAG acknowledge, with gratitude, that the draft strategy was developed in cooperation with beekeepers’ representatives, including the Bee Farmers’ Association of the United Kingdom, the British Beekeepers’ Association, the Welsh Beekeepers’ Association, Council of the National Beekeeping Associations in the United Kingdom, Bee Diseases Insurance Ltd, Bee Improvement and Bee Breeders’ Association, the CB Dennis British Beekeepers Research Trust, the National Diploma in Beekeeping, the Commercial Queen Rearers’ Association, as well as the NBU.

21. There are two main stages involved in the development and implementation of the strategy:

Stage 1 Produce strategy by autumn 2008	Stage 2 Implement strategy from autumn 2008 to 2018
Government in partnership with the NBU and beekeeping stakeholders	
Develop the strategy’s aims and agree the outcomes needed to achieve it	Develop detailed implementation plan. Each strategic outcome will be achieved through a specific workstream:
Identify proposed activities and priorities to achieve the outcomes	(1) communications and relationships (2) biosecurity
Public consultation (subject to Ministers’ views)	(3) beekeeping and husbandry (4) pests, diseases and other hazards
Finalise strategy in light of public consultation and publish it	(5) science and evidence base.

Chapter 2

Roles and responsibilities of stakeholders

22. The strategy's aim and outcomes (described in the next chapter) are ambitious. To achieve them, all stakeholders, as described below, will need to work together and recognise the common purpose of improving honey bee health and sustainability, and how they each contribute to securing this.

Beekeepers

23. Beekeepers are responsible for the health and welfare of their bees, and in the first instance, for the management of pests and diseases. This duty of care includes understanding that pests and diseases in their bees could spread to other apiaries nearby and/or further afield. They contribute to honey bee health by:

- recognising pests and diseases and knowing which of these are notifiable and have to be reported to Government;
- being vigilant and, in line with their legal obligations, reporting any suspicion of notifiable pests or disease to their Bee Inspector or the NBU;
- maintaining good husbandry and health practices to prevent and control the spread of pests and diseases;
- ensuring that their skills and competence levels are appropriate to the above, and updating them through further training as necessary;
- recognising the national (voluntary) database BeeBase as an important source of information and a key resource for disease control purposes, and hence signing up;
- complying with legislation on controlling pests and diseases, including standstill notices and import requirements;
- using medications and treatments appropriately, including responsible storage, safe administration and recording as well as complying with residue limits and withdrawal periods;
- maintaining records on the movement and location of their colonies within GB and making records available to their Bee Inspector on request;
- seeking specialist advice from their local beekeeping association or from their Bee Inspector as available and necessary to help discharge these responsibilities.

Beekeeping associations

24. Beekeeping associations also contribute to protecting and improving bee health by:

- supporting beekeepers by providing appropriate education and information (including via joint initiatives with the NBU) as well as accurate, current and impartial advice;
- promoting a code of good beekeeping husbandry and practice developed and agreed in collaboration with other associations and the NBU;
- encouraging beekeepers, where appropriate, to change practices and to aspire to higher standards of beekeeping, including their disease recognition and management skills;
- raising beekeepers' awareness of their legal obligations, including controls on importing bees and requirements on responsible storage, safe administration and recording of medications and other treatments used in their hives;
- emphasising, through their examination boards, disease recognition and the benefits of signing up (voluntarily) to BeeBase, more fully in examination syllabuses;
- working with other beekeeping associations to develop and implement coordinated initiatives and activities for the benefit of bee health;
- working with government to achieve common objectives.

25. Associations also contribute by encouraging members of the public to become beekeepers, thus ensuring a widespread population of honey bees.

Government

26. Government, represented by Defra and the Welsh Assembly Government, works with beekeepers to achieve common objectives. It contributes to honey bee health by:

- intervening in honey bee health and supporting beekeeping where necessary in the public interest, where the market on its own cannot deliver some or all of the objectives (market failure) and ensuring that the reasons for intervention are clear, justified, based on sound scientific evidence and informed by other stakeholders concerns. The reasons for intervention are:
 - to protect and promote the health and welfare of the honey bees
 - to protect the wider interests of crop production, the environment and society.

- setting, advising on and reviewing strategic objectives on managing and protecting the health of honey bees in consultation with other stakeholders;
- developing and implementing a policy framework to deliver strategic objectives, including ensuring that EU, international obligations and national policies are implemented in the most appropriate way to minimise the regulatory burden on beekeepers;
- working with other stakeholders to achieve common aims, including effective communications with individual beekeepers;
- maintaining a science and research programme to underpin these activities in consultation and/or collaboration with other stakeholders and in line with Defra's strategic aims and available resources;
- using the most up to date evidence base for decision making and for informing policy and operations.

27. The Government sets the policy on honey bee health which is implemented by the NBU and its Bee Inspectors (NBU)⁵ in England and Wales. The NBU contributes by:

- providing efficient, cost-effective, risk-based and quality-assured inspection and enforcement, through its field team of bee inspectors, to control notifiable pests and diseases and to implement regulations professionally, consistently and fairly;
- managing BeeBase – the national (voluntary) database of beekeepers – and seeking to increase the numbers of beekeepers on it;
- undertaking research and development on priority issues (subject to available funding);
- communicating objective, evidence-based specialist advice to all stakeholders;
- contributing to policy development including horizon scanning and risk assessment on current and emerging threats, and advising on potential consequences/impacts and effectiveness of policies on controlling notifiable as well as serious endemic pests and diseases of bees;
- providing quality-assured diagnostic services on outbreaks of pests and diseases;
- contingency planning for the possible arrival of exotic pests and diseases and other emerging threats;

⁵ The NBU and the Inspectorate will be incorporated into the new Regulatory Science Agency from 2009/10.

- supporting the development, promotion and implementation of good practice through training and education programmes coordinated with national and local associations and aimed at helping beekeepers to become more self-reliant in controlling pests and disease and to aspire to higher standards of beekeeping;
- applying the principles of good regulatory practice (as per the Regulators' Compliance Code 2006).

Other contributors

28. The broader science and research community based at UK universities and institutes contributes by research and analysis to help improve the science and evidence base.
29. Given the potential health risks posed to GB honey bees from imported honey, such as spores of American Foul Brood that may be present in imported honey, honey importers and packers take appropriate steps to prevent local honey bees from accessing items such as unwashed honey containers at packing plants. Their aim is to reduce the potential risk of spread of infection from their packing plants to local apiaries.
30. Food retailers and consumers may contribute to improving honey bee health and sustainability by supporting and rewarding beekeepers who supply honey that is of assured quality and purity and meet good standards of bee husbandry.
31. Representative bodies of medicine manufacturers and hive and appliance manufacturers and other suppliers recognise the importance of keeping up to date with bee health developments and ensuring that beekeepers are given sufficient advice to use their products safely and effectively.

Chapter 3

Outcomes

32. This section describes the five outcomes being sought in order to secure a healthy and sustainable population of honey bees. **These outcomes are statements which look ahead and their main purpose is to provide a focus for our work over the next 10 years.** They are intended to be achieved through a series of work plans to be developed and implemented by Government, the NBU and beekeeping associations and other stakeholders working together.

33. The work plans will build on what is already working well in each of these five areas, and will focus on particular aspects that need to be reviewed, strengthened or improved. Initial proposals on priority initiatives and activities for future work plans are summarised in Table 1 below, and are set out in more detail in Part 2.

34. The outcomes are as follows.

(1) Effective communications and relationships operate at all levels

- Government, the NBU and its inspectors, beekeepers and their associations share information, risk assessments and ideas. They agree and review responsibilities and priorities in partnership. They also continue to work with the research community, and with EU and international partners in pursuit of common aims.

(2) Effective biosecurity at all levels minimises risks from pests, diseases and undesirable species

- Government and its agencies continue to prevent and/or control imports, monitor access points, provide early warning of arrival and to maintain appropriate levels of biosecurity at their facilities.
- Additional (voluntary) arrangements ensure that the domestic sale and trade of honey bees and/or honey and other bee products present a minimal risk of spreading pests and diseases to other honey bee colonies in GB.
- Honey importers and packers ensure that their packing plants present a minimal risk of spreading of pests and diseases to local honey bee apiaries.
- Bumble bees used for commercial pollination present a minimal risk of spreading pests and diseases to honey bee colonies.

(3) Good standards of beekeeping and husbandry minimise pests and disease risks and contribute to sustaining honey bee populations – prevention is better than cure.

- Beekeepers are competent in honey bee husbandry, health and management. As a result, they see the direct benefit of applying good husbandry in the management and care of their colonies, including biosecurity and early detection and control of pests and diseases in cooperation, as necessary, with the NBU's inspectors .
- Beekeepers continue to have access to education and training programmes through their associations, and to practical, evidence-based advice to help establish their competence in husbandry and health management and to further develop these skills.
- As members of national or local beekeeping associations or other informal networks, beekeepers recognise the benefits gained from access to further support, training and practical advice from other beekeepers to help them maintain good standards of honey bee husbandry and health.
- Honey and other hive products are produced safely. Veterinary medicines and other treatments are recorded and used correctly to ensure that any residues in honey are kept to a minimum and do not compromise either consumer safety or consumer expectations that honey is a pure product.

(4) Impacts from pests, diseases and other hazards are kept to the lowest levels achievable

- Government's risk assessment process effectively identifies and reviews national and, as necessary, regional priorities for action on pests and diseases, as well as new or emerging risks.
- The national (voluntary) database BeeBase provides essential information about the location and numbers of colonies for the purposes of risk assessment, and for prevention and control of serious endemic and exotic pests and diseases. As a result, beekeepers, including those who are hard-to-reach and/or had not hitherto signed up, recognise the importance of this resource for communications and pest and disease control and sign up voluntarily.
- The reasons for the Government's control measures are clear, justified, based on sound scientific evidence and on understanding of food safety and environmental impacts. The response is also informed by beekeepers' concerns.
- In the event of unforeseen or emerging health risks, control measures may need to be based on best endeavours in the light of available information and understanding.
- Levers/sanctions available in current legislation on bee health (see Annex A) are effectively applied to reduce and manage risks from pests and diseases.
- Environmental and other hazards with potential impacts on honey bees, such as pesticides, deliberate removal of pollen-rich habitats and/or changes of

land use, are kept under review and appropriate actions taken as necessary in consultation with relevant agencies and based on up to date science and methods.

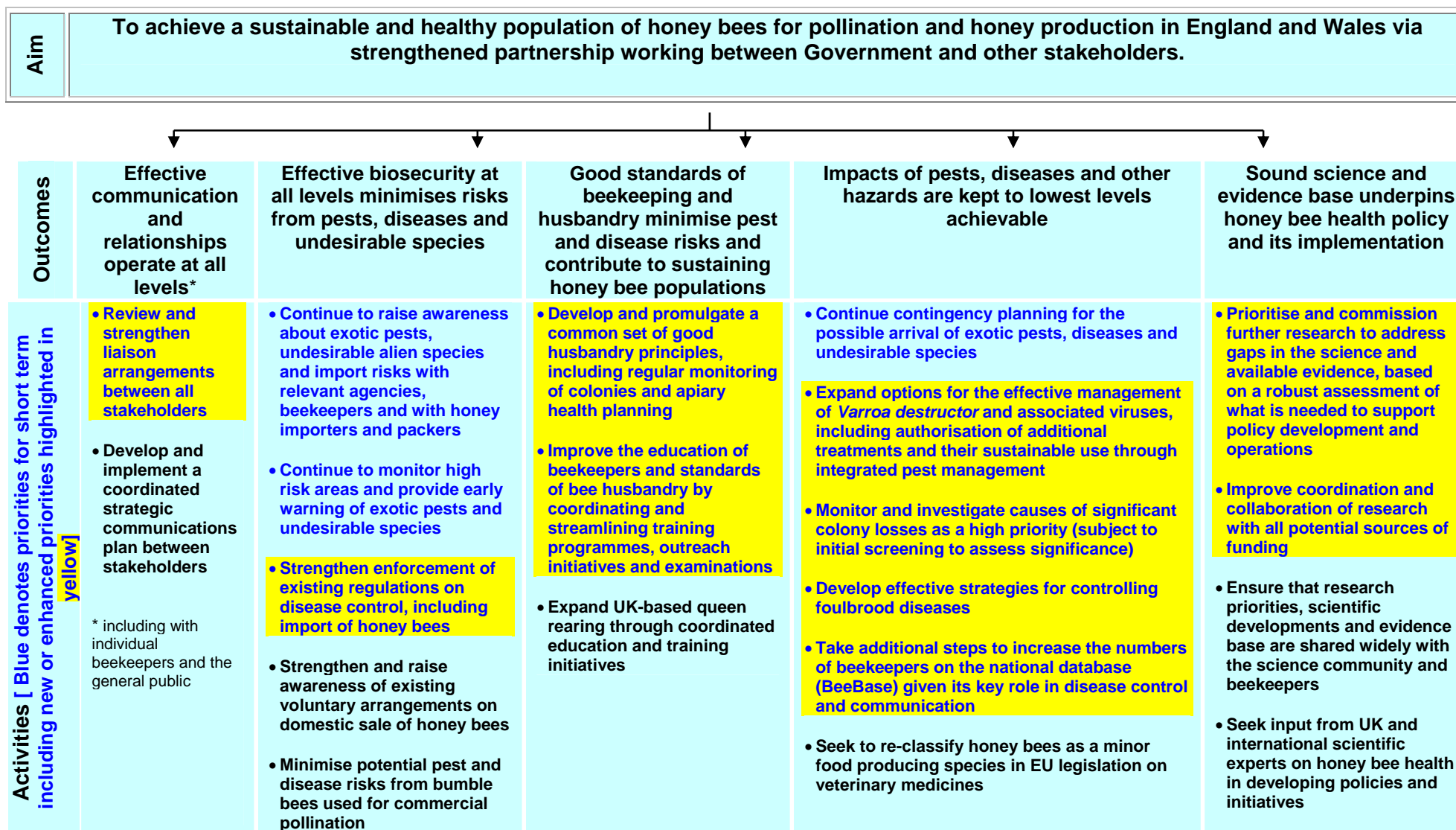
- Appropriate and effective veterinary medicines and other treatments are available as a result of engagement with treatment manufacturers and regulatory agencies, and are used sustainably.

(5) Sound science and evidence base underpins bee health policy and its implementation

- A well-developed science and evidence base, drawing on all potential sources of funding and/or in-kind contributions, improves our understanding of pest and disease risks and produces effective response and management methods for serious honey bee health threats.
- Research results relevant to proactive honey bee health management and husbandry as well as pest and disease risks and control methods are shared routinely with beekeepers.

35. Table 1 below summarises the strategy. It presents the aim and outcomes and also includes the proposed initiatives and activities that will be incorporated into specific work plans to achieve the desired aim and outcomes. It highlights (in blue) particular priority activities for the short term, including ongoing and new or enhanced activities. The other activities will be addressed over the medium or longer term. [Note: this Table provides more detail on the strategy than the overview diagram in the Executive Summary].

Summary of draft strategy on protecting and improving the health of honey bees



Chapter 4

Managing implementation of the strategy

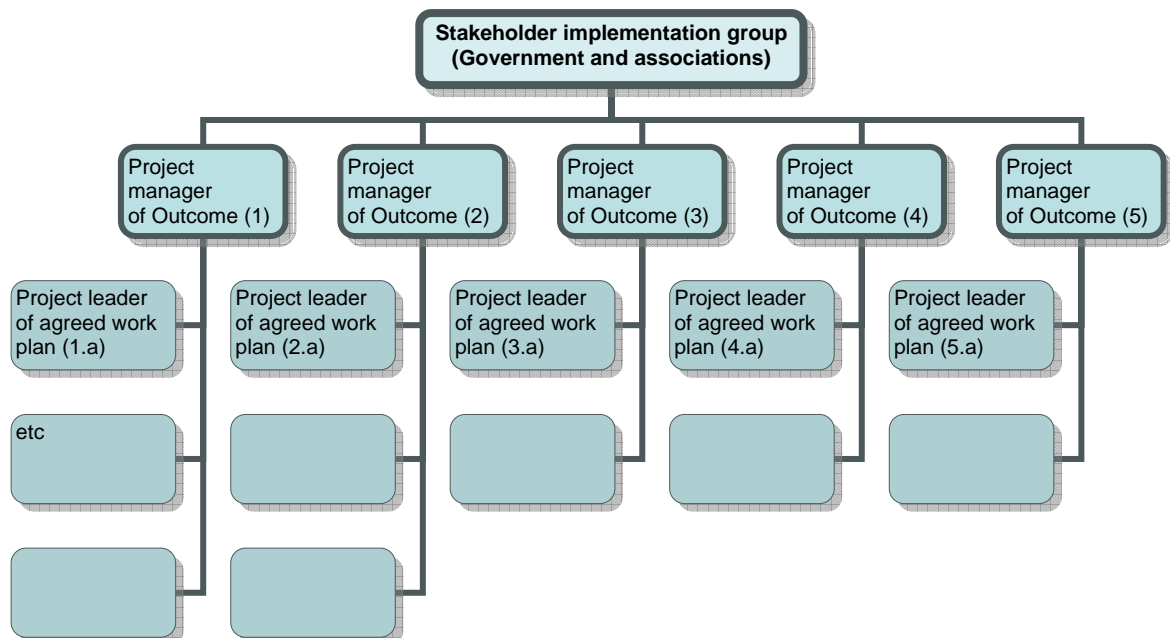
36. Defra and WAG in consultation with other stakeholders will agree actions and develop specific work plans, based on the proposed initiatives and activities in Part 2, and will put in place arrangements to manage implementation of the strategy.

Managing the strategy

37. The arrangements to manage implementation of the strategy will be established as part of the review of stakeholder liaison arrangements (a priority activity under strategic outcome 1). These arrangements are likely to comprise of an overall implementation programme which will be overseen by a stakeholder implementation group.

38. A key early activity for this group will be to identify the required work plans for the agreed initiatives and activities, agree the relative priorities, who is best placed to lead them and specific goals and milestones for delivery. This group would also review progress with implementation and agree any necessary further actions. It would also review the work plans and priorities in response to new information, changing circumstances or unexpected events.

39. The overall management structure may be along the following lines:



40. This shows the possible structure and reporting lines. Project managers and leaders may be responsible for several outcomes and/or projects; hence the

diagram is not intended to show the number of people leading on particular elements of the strategy.

Review of progress – measuring success

41. To measure progress there needs to be a common understanding of the baseline from which we are starting and a set of indicators to help measure success. The indicators will help to guide policy, inform priorities and target resources. They will be developed in consultation with stakeholders. For example, a measure of success for achieving good standards of beekeeping and husbandry might be the number of beekeepers attaining a qualification within a given period.

42. The general characteristics of a good indicator include:

- Highly correlated to the outcome or process they relate to;
- Relatively immune from external factors;
- Readily understood by all stakeholders;
- Obvious which direction is good and which is bad.

Part 2

Towards implementation

Proposed initiatives and activities

1. This sets out our proposed activities and initiatives during the implementation phase in order to realise the strategy's aim and outcomes. They will be finalised with other stakeholders in the light of comments made during public consultation, and will be developed into work plans which we will develop and implement together. Prioritisation will be important as we cannot tackle everything at once. The summary table in Chapter 3 (and the overview diagram in the Executive Summary) sets out our proposed priorities for the short term.

Outcome (1) - Effective communications and relationships operating at all levels

2. To achieve this strategic outcome, we propose the following activities:
 - Defra and WAG will work with beekeeping associations and other stakeholders to **review, and if necessary strengthen existing liaison arrangements between all stakeholders** [currently comprising the Annual Meeting of Beekeeping Associations (UK level) and the Bee Health Advisory Panel (BHAP)⁶] to ensure that they are fit for purpose and to consider alternative arrangements. This will extend to others such as the National Office of Animal Health.
 - Defra will **continue to strengthen current liaison arrangements with other Departments and agencies (such as VMD) and with international partners** on honey bee health matters, including attendance at relevant EC committees, and report back as necessary to stakeholders.
 - Defra, WAG, the NBU and national/local associations will **develop and implement a coordinated communications strategy for honey bee health issues to optimise opportunities to engage effectively with beekeepers** with a particular focus on those who are hard-to-reach, and/or not signed up to BeeBase and/or new to beekeeping to ensure that they are aware of available sources of advice and training on good practice.

Outcome (2) - Effective biosecurity at all levels minimises pest and disease risks

3. In order to minimise the risks of introducing or spreading pests and diseases, in addition to available statutory requirements which seek to control the health risks associated with imported honey bees:
 - the NBU will **continue to raise awareness of exotic pests, undesirable alien species and other specific import risks with other agencies with third country import responsibilities** at Border Inspection Points such

⁶ Current members of BHAP are NBU, BFA, BBKA, WBKA, CONBA and BDI.

as PHSI, RPA/HMI, Animal Health and Port Authorities, providing training and information as required.

- the NBU will also **continue to raise the awareness of honey packers and importers of how to reduce the potential risks** of spreading pests and diseases from honey packing plants to local honey bee apiaries.
- the NBU in collaboration with import agencies and beekeepers will **monitor high risk areas and provide early warning of the arrival of exotic pests and diseases.**
- national and local beekeeping associations will help to **raise their members' awareness of the health risks and legal requirements associated with imported honey bees**; and, in addition, the health risks from imports of unrefined beeswax, other hive products and used hives and equipment, as well as highlighting the benefits of biosecurity in the routine management of their colonies.
- the NBU will ensure that, whilst continuing to apply the principles of good regulatory practice, **Bee Inspectors are trained in evidence gathering and effective enforcement of statutory requirements in relation to disease control (including regulations governing the import of honey bees)** to make sure that sanctions are applied as necessary to those who import honey bees illegally and/or who fail to comply with other statutory requirements.
- The NBU and national associations will work together to **raise awareness and strengthen existing voluntary arrangements to reduce the risk of spreading pests and diseases from selling honey bees and hive products such as imported unrefined beeswax** within GB.
- The Government will review arrangements to **minimise the potential risk of spreading pests and diseases from any species of bumble bee used for commercial pollination** to honey bee colonies or to other species of bees.

Outcome (3) - Good standards of beekeeping and husbandry minimise pest and disease risks – prevention is better than cure

4. To achieve the strategy's aim and outcomes, education and training activities aimed at improving the standards of beekeeping and husbandry are essential. Minimising disease through good husbandry should help maximise honey production and income, particularly if the honey and other hive products can demonstrate high purity and health standards at point of sale. High standards of biosecurity and husbandry may also help reduce the need for treatments and hence reduce costs. Proposed activities to improve education and standards are as follows:

- The NBU and national associations will work together to **develop and promulgate a common set of good husbandry principles** building on

best practice advice on pest and disease prevention and management and supported, as far as practicable by peer-reviewed evidence on effectiveness and benefits. This set of principles would be user-friendly and form the basis of all advisory visits, training programmes as well as examinations on honey bee husbandry (which should include disease recognition and management as a matter of course). Important elements of the advice will be **regular monitoring of colonies and apiary health planning**, including a template for beekeepers to use to record medications and other treatments, and reinforcing requirements on safe storage and administration of medications.

- National associations, those responsible for the National Diploma in Beekeeping and the NBU will work together on a crucial element of the strategy - **improving the education of beekeepers and the standards of bee husbandry through coordinating and streamlining training programmes, outreach initiatives and practical and written examinations** which, as now, are open to non-members. In taking this work forward they will identify and recognise which partner(s) is best placed to influence or champion change based on current strengths, such as the associations' role in providing a structured range of examinations across all levels of beekeeping, and the NBU's focus on group-training of beekeepers and other trainers in pest and disease recognition skills, in bee husbandry and integrated pest management to control pests and diseases. Proposed joint activities include:
 - reviewing, and as necessary strengthening current liaison arrangements between all those delivering training to ensure effective coordination and delivery of national and local education and training programmes;
 - developing, agreeing and implementing plans to encourage beekeepers to undertake education and training to become competent in husbandry and in pest and disease management, and to keep their skills up to date through continuing professional development;
 - ensuring that apiaries used by beekeeping associations, NBU and other training providers to train new/current beekeepers in good practice will follow the agreed best practice as a minimum standard, otherwise they should not be used for training;
 - seeking to achieve national recognition of the associations' qualifications with the aim of attracting beekeepers onto courses.
5. Queen rearing is another key element of honey bee husbandry which could help to deliver improvements in bee health, particularly if successful in achieving increased tolerance to pests and diseases and hence reducing reliance on imported queens, and the associated health risks (particularly through illegal imports of queens). Proposed activities in this area include:

- National associations will **work together towards expanding UK-based queen rearing through coordinated education and training initiatives** building on current practices and guidelines. The aim will be to encourage, as far as practicable, a systematic and co-operative approach to queen rearing in order to improve key traits in our honey bees such as hygienic behaviour, docility, foraging behaviour, tolerance to *Varroa destructor* and other diseases, honey production and colony vigour.
- National associations will keep these initiatives under review, and subject to the development of breeding techniques, such as selective breeding programmes and gene-based methods, would revise and update their guidelines as necessary.
- The NBU will consider with national associations the scope for field testing of 'improved' honey bees to assess key health traits with the aim of sharing results with beekeepers.

Outcome (4) Impacts from pests, diseases and other hazards are kept to lowest levels achievable

6. Regulations and the sanctions they contain will continue to be a key means of managing and reducing the risks from pests and diseases. Our proposed activities on pests and diseases, as set out below, are guided by the impacts or potential risk they pose to honey bees based on current disease levels, concerns expressed by stakeholders and current understanding about possible future threats. As pests and disease risks change over time, Defra, WAG, delivery bodies and national associations will work together to regularly review national and local activities and priorities for action guided by up to date evidence on pest and disease threats.
7. In addition, Defra and WAG will work with the VMD to **re-classify honey bees as a minor food producing species in EC legislation⁷ on veterinary medicines**, when this is next due for review, with the aim of removing one of the current obstacles to development and production of treatments for this species. In parallel with these (future) negotiations, beekeepers and their associations should also work with their MEPs to influence achieving the same aims.

Varroa mite

8. The varroa mite is probably present in all UK bee colonies and is the number one management problem for beekeepers causing direct or indirect damage to colonies. Uncontrolled populations of mites can lead to greater vectoring of secondary pathogens such as viruses and detrimental effects on available nutrition and health of the bees, leading to significant colony losses.
9. Given these difficulties, our objective is **to reduce the impacts from varroa and to expand options for its effective management:**

⁷ Directive 2001/82/EC as amended by 2004/28/EC

- the NBU will continue to offer evidence-based advice to beekeepers on control of Varroa and associated viral diseases, including best practice from overseas and in cooperation with beekeeping associations. The NBU will take steps to engage hard-to-reach beekeepers. This advice will focus on:
 - (i) seeking to minimise the level of infestation as far as achievable;
 - (ii) current veterinary medicine treatment options;
 - (iii) integrated pest management; and on
 - (iv) use of queens demonstrated to show tolerance to varroa.

- Defra, WAG, the NBU and national associations will consider how best to develop a more user-friendly set of guidelines on varroa treatment options to minimise the risk of varroa developing resistance to the treatments and hence ensure their sustainable use. The aim would be for associations to circulate this advice through beekeeping magazines and newsletters not only to beekeepers but also to their suppliers. The associations and the National Diploma in Beekeeping would use the advice as the basis for training and/or examination.

- Defra, WAG and national associations, with advice as necessary from the VMD, will coordinate their efforts to encourage marketing authorisations for additional varroacides (and other honey bee veterinary medicines and other treatments particularly for exotic threats such as small hive beetle) in the UK, including through the decentralised procedure permissible under EC veterinary medicines legislation⁸:
 - Defra and WAG will hold discussions with the National Office for Animal Health and European equivalents;
 - national associations will hold discussions with the treatment manufacturers.

- VMD in cooperation with Defra and WAG will consider how to respond to misleading advertisements for various over-the-counter products which claim to control varroa and other pests and diseases.

- Defra, WAG, the NBU and stakeholders will explore other possible options for reducing the impacts of varroa, e.g. further outreach initiatives on integrated pest management, breeding varroa resistant queens and developing novel biological control methods.

Significant colony losses

10. Linked to varroa, a further key activity is to respond efficiently and effectively to significant colony losses from secondary pathogens associated with varroa or due to unknown or emerging causes:

⁸ This is also known as Mutual Recognition Process and applies where a product has been authorised for use in one EU country, after which the holder of the authorisation can apply for authorisation in other EU countries.

- After initial screening in consultation with the National and Regional Bee Inspectors to assess possible significance, the NBU will **investigate the situation as a high priority using lab-based diagnosis aiming to identify the cause and report back to the affected beekeeper** as soon as practicable. As necessary in the light of the emerging situation, the NBU would seek approval for additional resources, including laboratory time, from Defra or WAG to ensure timely delivery of the results.
- the NBU will consider expanding its current network of sentinel apiaries (which were set up originally close to ports to identify the possible arrival of small hive beetle) where its local bee inspector would work in close cooperation with the beekeeper to monitor colony losses, over and above those caused by the current range of pests and diseases in order to identify new trends and significant losses.
- the NBU will consider strengthening voluntary monitoring programme for beekeepers to assess colony losses and to identify common causes and possible solutions.

Exotic pests and diseases

11. A further high priority area is to ensure that effective contingency plans are in place to respond to the potential arrival of exotic pests, diseases and undesirable species, in the event that biosecurity arrangements are ineffective in keeping them out. Our objective is to continue **contingency planning to prepare for the possible arrival of exotic pests, diseases and undesirable species**. In order to prepare for, and address these risks:

- The NBU will review its horizon scanning and risk assessment process and report back to Defra, WAG and beekeeping associations. The aim is to ensure effectiveness of the process in tracking the emergence and spread of new and emerging threats or direct or indirect negative impacts of beekeeping i.e. pests, diseases, undesirable species of bees (e.g. 'Africanised' honey bees) or other invasive species overseas (e.g. Asian hornets).
- Defra, WAG and the NBU in collaboration with beekeeping associations will produce, exercise and keep under review a contingency plan for the possible arrival of known exotic pests and diseases, in particular small hive beetle and *Tropilaelaps* species. A summary of ongoing planning is at Annex C.
- In relation to contingency supplies, the NBU will seek approval from relevant agencies, including the VMD, for the emergency use of specific treatments against exotic threats, and, subject to Defra's and WAG's approval, purchase stocks of these treatments for storage in advance of emergency use, including establishing a national distribution plan for the treatments which could include regional storage.

- The NBU will also purchase traps and other equipment in advance for the control of exotic threats, subject to completion and peer review of current research and Defra's and WAG's approval, and establish a national distribution plan for the equipment which could include regional storage. The NBU would train beekeepers in the use of the equipment.
12. In the event of an outbreak of an exotic pest or disease, or the arrival of an undesirable species, Defra, WAG and the NBU will work closely with beekeepers and their associations to eradicate the outbreak or species swiftly and effectively where possible or to contain it using an agreed approach as set out in the contingency plan. Lessons learned would be identified and addressed as soon as practicable after the event.
13. As part of these contingency arrangements, further work will be undertaken by Defra, WAG, the NBU and stakeholders to establish whether and how to identify and deploy volunteer beekeepers to assist the NBU's local bee inspectors during eradication of exotic pests and diseases. This work would also consider terms and conditions. Effective deployment of volunteers, for example at the local disease control centre to assist tracing possible spread or in route planning, could help speed up the response and hence increase the likelihood of early eradication or containment.

Foulbroods

14. Our fourth objective is **to develop effective strategies for controlling American and European Foulbrood diseases** (AFB and EFB) which are both widespread in the GB posing a perennial risk to honey bees. Both have proved difficult to eradicate, in spite of statutory controls, due mainly to gaps in understanding about the causative bacteria.
15. In the event of an outbreak of AFB or EFB, in addition to the statutory controls implemented by, and advice given by the NBU and its Bee Inspectorate, national associations may consider offering additional advice and support and/or mediating to resolve any disputes as necessary, on a voluntary basis, to their member(s) whose apiaries are affected. This would be subject to the member(s) informing their associations in the first place.
16. Insurance schemes on AFB and EFB from Bee Disease Insurance Ltd will continue to be available to compensate for losses incurred and help to encourage beekeepers to report these diseases to their Bee Inspector.
17. In relation **to AFB**:
- Defra and WAG will continue with current statutory controls maintaining notifiable disease status consistent with requirements under EC legislation to further reduce its incidence to the lowest levels achievable.
 - Disease control will continue to be by compulsory destruction of infected hives and potentially infected equipment and materials to minimise the risk of re-infection in the apiary by the causative bacterium which is persistent

and long-lived in the environment. At the same time as destroying the hives and equipment, the NBU's inspectors will provide rigorous advice for the beekeeper to follow to reduce the risk of re-infection within and between apiaries.

18. In relation to **EFB**:

- Defra and WAG will continue with current statutory controls for EFB to further reduce its incidence to the lowest levels achievable, including notifiable disease status and disease control by compulsory destruction of infected hives and destruction or sterilisation of associated equipment and materials, or by appropriate husbandry controls, or by treatment with antibiotics supplied under veterinary prescription.
- As the most effective control method, compulsory destruction of infected hives and destruction or sterilisation of associated equipment and materials will be the preferred option, although decisions on methods would be subject to the time of year and the number of infected colonies. The second option is appropriate husbandry controls and integrated pest management. The presumption will be **against treatment of EFB with antibiotics** due to their poor effectiveness, potential residues in honey, the possible development of resistance by the causative bacterium, and the risk that treatment could mask the incidence of AFB infection in the hive.
- On completion and satisfactory peer review of current research and development studies by the NBU on shook swarm and husbandry techniques, the NBU, in cooperation with beekeeping associations would continue to train beekeepers in husbandry and integrated pest management to control and manage the disease effectively.
- The NBU would work with local beekeeping associations to:
 - develop a better understanding of current disease levels, disease spread, epidemiology and the genetic basis in order to review effectiveness and economic benefit of current control methods and available or emerging husbandry methods, including shook swarm and/or regular comb replacement.
 - set up pilot studies in 3 regions to put into practice husbandry-based control methods, including queen replacement strategies. These and currently available results will provide evidence for NBU-led extension programmes aimed at ensuring that best practice techniques are shared effectively with beekeepers.

Other serious pests and diseases

19. The NBU, supported by national and local associations will continue to provide advice to beekeepers on recognising and controlling other pests and diseases. They will also keep under review the incidence and significance of

these diseases in order to assess whether any further control measures are necessary.

A voluntary national database of beekeepers

20. Access to a comprehensive record of all people keeping bees is essential for the NBU to deliver effective disease control and underpins our other objectives and priorities for controlling pests and diseases. In particular, it would enable the NBU to communicate with all beekeepers in the event of the arrival of exotic pests or diseases and to trace the source and/or assess the potential spread, hence keeping ahead of the outbreak. Without such access, attempts to eradicate or contain an outbreak, whether caused by exotic or endemic pests and diseases, are unlikely to work swiftly and effectively.

21. Not all beekeepers have signed up to BeeBase, the current voluntary (free of charge) national database of beekeepers managed by the NBU. This is a significant weakness in our preparedness to deal effectively with exotic pests and diseases. Given the potentially significant losses that beekeepers (and their suppliers) could experience from the arrival and possibly rapid spread of small hive beetle and other exotic pests and diseases, a further key objective is to increase the numbers of beekeepers on BeeBase on a voluntary basis and to make sure that BeeBase is up to date before that (unpredictable) event. An additional objective is to establish, through BeeBase, a more accurate record of the total number of beekeepers. The proposed actions are:

- The NBU, national beekeeping associations and suppliers will work together to develop an agreed approach **to increase the numbers of beekeepers on BeeBase** on a voluntary basis. This will include exploring the scope of offering any incentives to being signed up to BeeBase. The intention is for signing up to BeeBase to remain voluntary and free of charge. The Government does not intend to set up a compulsory scheme, not least due to the high set-up and management costs but also in the light of experience of compulsory schemes in other countries, where they have not been fully subscribed.
- The NBU and national associations will ensure that the benefits of signing up to BeeBase for pest and disease control purposes are highlighted in education and training programmes for beekeepers.
- The NBU will work with national associations to review, and as necessary to improve BeeBase's accessibility and ease of use.

Other hazards

22. Defra, WAG, the NBU and national associations will keep under review other hazards, such as pesticide poisoning, loss of habitat and flooding, and their impacts on the sustainability of honey bees. In the event of significant impacts, Defra and WAG will work with relevant agencies to review and improve, as necessary, current arrangements and practices.

Outcome (5) – Sound science and evidence base underpins honey bee health policy and its implementation

23. Defra and WAG use sound scientific advice and best available evidence as key inputs to inform policy development, decision making and operations. Annex D provides a short introduction to the UK's research activities on honey bee health, including Defra's and WAG's formal arrangements such as development and publication of ROAME statements (Rationale, Objectives, Appraisal, Monitoring and Evaluation) which set out the rationale and objectives for each research programme area.

24. A key component of the strategy is to ensure that the science and evidence base in relation to honey bee health is well developed and provides support for the following desired outcomes:

- Effective biosecurity at all levels to minimise pest and disease risk;
- Good standards of beekeeping and husbandry minimise pest and disease risks;
- Keeping impacts from pest, diseases and other hazards to the lowest levels achievable, including statutory controls, and risk assessment to identify and review priorities for action on pests and diseases, as well as new or emerging risks.

Proposed scientific objectives for research

25. The proposed objectives below cover the research interests of all stakeholders. From Defra's and WAG's perspective, the focus is on the first four bullets, i.e., applied research to address key gaps in the science and evidence base in order to support policy development and operations. In addition to these four areas, beekeeping stakeholders' research interests also extend to improving general husbandry and bee breeding and rearing.

- To develop, as required, new diagnostic methods which are sensitive and robust for the detection and identification of exotic pests and diseases and other serious endemic pests and diseases, including, as appropriate, on-site methods.
- To improve the understanding of exotic pests and diseases, and serious endemic pests and diseases, and to develop methods for optimal eradication or containment strategies.
- To investigate control methods that can be used for managing serious endemic pests and diseases including novel husbandry techniques and methods that can be used as part of Integrated Pest Management (IPM) approaches.

- To provide data by research to identify and assess threats to honey bee health in England and Wales including exotic pests and diseases, invasive competitor species, undesirable predator species and environmental health hazards, in order to determine their impact on apiculture and inform policy. Work might also consider the development of pest risk assessment methodologies for Bee Health.
- To develop data and evidence to provide a sound scientific basis for advice and techniques on general husbandry, nutrition, breeding and rearing.

26. The first four objectives are taken from Defra's draft ROAME on the bee health programme (see www.defra.gov.uk/hort/Bees/Research/bhroame.pdf). Defra will use the ROAME as the framework for commissioning research on honey bee health, and will review it on a regular basis, typically every 5 years.

27. In addition, Defra will develop an assessment of the evidence and innovation needs for improving honey bee health in consultation with other stakeholders. A draft summary diagram sets out our initial views on these needs (see www.defra.gov.uk/hort/Bees/Research/eisgraphic.pdf).

Improving coordination and collaboration

28. In order to ensure that we improve coordination and collaboration and that we draw on all potential sources of funding, a key priority is for Defra and WAG to work with other funding bodies and national associations, through a Research Funders' Forum which will meet annually, to:

- initiate and lead discussions to identify research priorities and to help coordinate honey bee research undertaken via the various funding bodies and stakeholders;
- explore opportunities for collaborative joint funding of research, including in-kind contributions from beekeeping associations;
- optimise use of current sources of funds and opportunities from national and EU sources;
- strengthen communications with the research community to extend and improve awareness of gaps in, and priorities for developing the evidence base, and to improve awareness of funding sources and opportunities;
- involve, as appropriate, representatives from national associations and end users of research on steering groups for specific research projects.

Additional activities

29. Additional activities are:

- For the NBU in partnership with stakeholders to establish a communications strategy to ensure that scientific developments, the evidence base and technological advances are shared widely with the research community and with beekeepers for the benefit of honey bee health.
- For Defra and WAG to establish a database of, and build relations with specialists and scientists on honey bees who could provide expertise as necessary, such as in response to incursion of exotic pests.

EXISTING REGULATORY FRAMEWORK

1. Domestic legislation relevant to managing and controlling the health of managed honey bees in England and Wales is mainly derived from EC legislation. The main purposes of the legislation are to manage the risks to honey bee health associated with international trade and to control notifiable diseases and pests. Most honey bee health legislation falls within the scope of EC animal health legislation and structures because honey bees are regarded as food producing animals along with other livestock.

Domestic legislation

2. Domestic legislation is implemented under the Bees Act 1980, which empowers Ministers to make Orders to control diseases and pests affecting honey bees, and provides powers of entry for authorised persons. Such Orders are implemented separately by Government Departments in England, Wales, Scotland and Northern Ireland. There are no provisions for compensation in respect of any exercise of the powers under the Act.

3. In relation to offences, the Act provides that ‘any persons who:

(a) imports any honey bees or other things into Great Britain in contravention of an order under Section 1 of the Act;

(b) moves any honey bees or other things within Great Britain in contravention of any such order; or

(c) otherwise contravenes or fails to comply with the provisions of any such order or with any condition imposed by any licence issued under any such order;

Shall be liable on summary conviction to a fine not exceeding £1,000.’
However, as a result of the standardisation of fines under the Criminal Justice Act 1982, fines for offences under the Bees Act, and orders made under it, have been set not to exceed level 5 on the standard scale (currently £5,000).

4. In England, the **Bee Diseases and Pests Control (England) Order 2006** requires beekeepers (and others) to notify the Secretary of State (in practice the NBU acting on his behalf) of the suspicion of the presence of the notifiable diseases, American foul brood and European foul brood, and the notifiable pests, small hive beetle and *Tropilaelaps* mites.
5. In response to a notification of a suspected notifiable disease or pest, restrictions will be imposed on the movement of anything that might spread the disease or pest until an authorised Bee Inspector has visited the affected premises to confirm the identification and a decision has been made on action to eradicate or control the outbreak. The Secretary of State may also declare an infected area and implement control measures within it, if the small hive

beetle or *Tropilaelaps* has been found present in that area. The Order also implements the requirements for post import controls of queen honey bees and attendant workers, and bumble bees, imported from third countries contained in Commission Decision **2003/881/EC**.

6. In England, the **Animals and Animal Products (Import and Export) Regulations 2006** implements the EC Directive on veterinary and zootechnical checks (**90/425/EEC**) applicable in intra-community trade in certain live animals and products between Member States of the EU and eliminates the need for veterinary checks on certain animals, including honey bees, at frontiers. Instead it provides for a system of intensified checks at points of origin and spot checks at places of destination. The 2006 Regulations also implement Directive **91/496/EEC** which covers veterinary checks for animals, including honey bees, entering the Community from third countries.
7. In Wales, the relevant legislation comprises **the Bee Disease Pest Control (Wales) Order 2006 No. 1770 (W.172)** and **the Animals and Animal Products (Import and Export) (Wales) Regulations 2006 No 1536 (W.153)**.

EC legislation

8. At European level, the 'Balai Directive', **92/65/EEC** on animal health requirements for trade in honey bees lists American foul brood (AFB), the small hive beetle (*Aethina tumida*) (SHB) and *Tropilaelaps* mites as notifiable pests and diseases throughout the EU. The directive lays down the provisions for intra-Community trade in honey and bumble bees, and requires consignments of honey bees moved between Member States to be accompanied by an original health certificate confirming that the consignment comes from an area free from AFB, SHB and *Tropilaelaps* mites and is free from the listed pests and disease.
9. In December 2003, the Commission introduced new legislation to strengthen the controls and certification requirements for importation of honey bees (and bumble bees) from outside the EU. **Commission Decision 2003/881/EC** sets out the requirements for export certification of bees destined for the European Community (covering honey bees and bumble bees used for commercial pollination). This refers to the Annex to Council Decision 79/542 for the list of countries from which bees may be imported if, in addition, these countries can make various statements about the status of the notifiable pests and disease and that the bees have been inspected and found free of pests and diseases prior to export.

Authorised independent inspectorate

10. In order to carry out the necessary surveillance, inspection and certification requirements required by the legislation, it is necessary to establish and maintain an inspectorate that is independent of beekeepers and farmers, and importers and exporters. In effect the NBU's Bee Inspectors are appointed as authorised persons under the Bees Act 1980, the Bee Diseases and Pests

Control (England) Order 2006, and the Animal and Animal Products (Import and Export) (England) Regulations 2006. This gives Bee Inspectors **authority to:**

- Enter premises where it is believed honey bees, hives, appliances and honey bee products are kept.
- Examine these items and to take samples of them in order to see if they are free from infection.
- Mark any hive or appliance for identification purposes.
- Destroy colonies infected with AFB or European Foul Brood (EFB).
- Treat colonies infected with EFB with antibiotics.
- Carry out documentary and physical checks on imported consignments as necessary.

Legal responsibilities of beekeepers

11. The Bee Diseases and Pests Control (England) Order 2006 obliges beekeepers to:

- Provide the information and facilities that a Bee Inspector may require to carry out their work, including details of the number and whereabouts of all owned or managed colonies.
- Report immediately (to the NBU or one of its Bee Inspectors) any suspicion of the presence of AFB, EFB, SHB or *Tropilaelaps* mites.
- Not move any honey bees, hives or appliances from a place where honey bees with suspected AFB, EFB, SHB or *Tropilaelaps* mites are kept until a sample sent to the NBU has been examined and it is confirmed that no AFB, EFB, SHB or *Tropilaelaps* mites is present, or until the honey bees have been examined by a NBU Bee Inspector who has confirmed that he/she is satisfied that no notifiable disease or pest is present.
- Destroy a colony confirmed to be infected with AFB or EFB **under the supervision of a NBU Bee Inspector** within 10 days of diagnosis. Or in the case of EFB, another option is to treat with antibiotic⁹ under the supervision of a NBU Bee Inspector within 10 days of diagnosis. Not to use, market or sell honey or honey bee products from any colony treated with antibiotic within 6 months of treatment. Not to treat honey bees with any substance that may disguise the presence of AFB or EFB.
- **Import responsibilities** - where honey bees have been imported from third countries, the beekeeper must comply with the post-import controls laid down in the Order. In particular:
 - when the honey bees arrive at the apiary of destination (as indicated on the health certificate accompanying the honey bees), the consignee (named on health certificate) shall:

⁹ See para 18 page 31 on EFB, which places greater emphasis on hive destruction and husbandry methods rather than treatment with antibiotics.

- transfer the queen honey bees to new cages before they are introduced to any local colonies of honey bees; and
- send the cages in which the bees were transported from the country of origin, the attendant bees and other material that accompanied the queen bees to the National Bee Unit for the purpose of investigating the presence of a notifiable pest.

Additional background information on UK beekeeping and pest and disease risks

Beekeeping

Beekeeping in the UK currently comprises some 44,000 beekeepers who manage about 274,000 colonies of honey bees. Numbers have declined since the Second World War, for example there were some 80,000 beekeepers and 400,000 colonies in the early 1950s. Reasons for this decline include the end of sugar rationing;

- increasing urbanisation;
- lower levels of public interest and involvement in producing honey; and, more recently
- difficulties associated with managing certain pest and diseases, particularly varroa.

Around 99% of the UK's 44,000 beekeepers operate on a small scale (non-commercial or hobbyists) managing around 230,000 colonies and producing the bulk of the UK's annual 6,000 tonnes of honey. The remaining 200-300 beekeepers operate commercially each usually managing 40 colonies or more, with some managing hundreds of colonies. As well as producing and selling honey and other products such as wax, commercial beekeepers also earn fees from crop pollination services to farmers and producers. Many commercial beekeepers depend on beekeeping for their income.

There are no precise figures available on the value of beekeeping or on its wider contribution to agriculture or the environment through pollination. One recent source (ADAS in 2001) suggested that the total revenue of beekeepers in the UK was £11.3 m derived from honey, pollination fees and other products. More significantly, the value of honey bees in crop pollination in the UK was estimated at £120m by attributing a certain proportion of the market value of UK crop production to honey bee pollination activity. A more recent estimate for 2006 was £166m.

Pest and disease risks

Significant endemic risks include:

- Varroa mites which were first confirmed in the UK in 1992 and have since spread to most parts. Initially controlled effectively by pyrethroid varroacides, by 2001 the mites had developed resistance to these treatments and the prevalence of such resistance is increasing. Their control is therefore becoming more difficult due to lack of effective alternative treatments. As a result, varroa mites continue to be the most serious economic pest of honey bee colonies across many regions.
- Honey bee viruses associated with varroa infestation leading to colony losses. An increase in colony losses has been observed over recent years,

mainly due to varroa and viruses, though other as yet undetermined causes could be contributing to losses.

- Recurring American and European foul brood in some areas where these diseases are proving persistent and/or there is limited success in controlling them.

Significant potential exotic risks include:

- The small hive beetle (*Aethina tumida*), or SHB, which has not yet been found in the UK or in other parts of Europe. However, it poses a threat as it is causing significant economic losses in honey bee colonies in countries, such as the USA, from which we import honey bee queens and/or fruits and plant products.
- Parasitic brood mites (*Tropilaelaps* species) which have not yet been found in the UK or in other parts of Europe but pose a threat due the damage they cause in honey bee colonies in central and eastern Asia and in the Middle East and the risk in the future that they could extend their range westwards into Europe.
- Undesirable species include the Cape honey bee, Africanised honey bees, Asian hornets and various Asian mites, none of which have yet been found in the UK.

Contingency planning for exotic pests and diseases

Ongoing contingency planning by the NBU in collaboration with national and local associations includes:

1. Education and training to ensure early recognition and identification

- Training of beekeepers to recognise exotic pests and diseases as well as undesirable species of bees or other invasive species, and to raise their awareness of what they will need to do should they identify an exotic pest or disease or undesirable species and the control measures.
- Encouraging and training beekeepers to use available traps for small hive beetle in their hives to ensure the earliest possible identification of its arrival.
- Keeping under review the pathways by which exotic pests and diseases could arrive into, and then spread across Great Britain, and learning lessons from countries where these pests and diseases have become endemic; and informing beekeepers and others, such as honey importers and packers, about these potential risk pathways.
- Raising awareness of beekeepers about their biosecurity role particularly in reducing the risk of importing (and then spreading) exotic pests and diseases, such as by complying with import requirements for live honey bees.

2. Reviewing and exercising the contingency plan

- Revision of the current contingency plan to take into account advice from the EU, when available, on safeguard control measures on the small hive beetle.
- Reviewing the current contingency plan for exotic pests and diseases annually, including reflecting lessons learned from other countries.
- Exercising the contingency plan regularly particularly in high risk areas at operational, tactical and strategic levels, supported by an appropriate communications strategy. Lessons learned from exercises are identified and addressed within 6 months of completion of the exercise and reflected as necessary in the revised contingency plan.

Introduction to research activities on honey bee health

1. The UK's long history of research relevant to honey bee health has been funded mainly by Government, but with important contributions from the beekeeping associations such as the British Beekeepers Association and the CB Dennis Trust, the Bee Improvement and Bee Breeders' Association (BIBBA) and agrochemical companies. As a result, there is a good evidence base on bacterial and viral pathogens, parasites and mites, the complex interactions between them, diagnostics and control methods. However, there are still existing and new gaps in our science and evidence base that research can fill in order to help respond to current and future threats to honey bee health. The summary graphic at X on evidence and innovation needs sets out the key areas of the evidence base.
2. The main researchers on honey bee health in the UK are based in the NBU, the Biological and Biotechnology Science Research Council (BBSRC) unit at Rothamsted, the Horticultural Research Institute at Warwick University, and in several other universities and institutes. Defra and WAG recognise the importance of maintaining a critical mass of expertise in the pests and diseases of honey bees. Hence we have recently funded PhD students on honey bee health projects. This may also help to broaden the range of institutes undertaking honey bee research and the pool of individual scientists with honey bee health expertise.
3. Research workers disseminate their results to the scientific community through the scientific literature and conferences and to beekeepers through meetings and lay publications.
4. Defra and WAG have formal arrangements in place to identify research needs and to allocate, distribute and use available funding. Use of funds is optimised by rigorous review, prior to and after commissioning, to ensure the highest standards of science and relevance to policy needs are achieved. Defra research is commissioned in a systematic way against published rationales and objectives that are set out in ROAME statements (Rationale, Objectives, Appraisal, Monitoring and Evaluation) for each research programme area.

Glossary of terms

American Foul Brood - A bacterial disease of honey bees which affects the developing brood. It occurs in the UK and is notifiable under regulations to control honey bee diseases. A similar disease is called European Foul Brood.

Antibiotic - A substance produced or derived from a microorganism, which selectively destroys or inhibits the growth of other microorganisms.

Apiary - A hive or groups of hives whose management, for disease control purposes, allows them to be considered as a single epidemiological unit.

Asian hornet (*Vespa sp. For example Vespa velutina*) - is found in Asia and in 2004 was accidentally introduced into southern France with imported goods. It is aggressive and readily attacks and feeds on honey bees, thus threatening the livelihoods of beekeepers in southern Europe. It has not been found in the UK but is a potential threat.

Bee hive – containers in which honey bees are kept or nest.

Beeswax - a complex secretion from the wax glands of young bees.

Biosecurity - is the prevention of pests and/or disease causing agents entering or leaving any place where honey bees are kept – both at local scale (in hives and apiaries) and at national scale. It involves a number of measures and protocols designed to prevent pests and/or disease causing agents from entering or leaving a property or country and being spread.

Brood - the eggs, larvae, and pupae within a honey bee colony.

Colony – honey bees live as a colony comprising sterile female workers, male drones, and a (fertile) queen bee. Colonies can have as many as 60,000 individuals at their peak. The colony lives in a hive or nest.

Endemic disease – A disease which is constantly present in a given population or in a given geographical area. It is usually applied to the country as a whole.

Epidemiological unit - means a group of animals (including bees) with a defined epidemiological relationship that share approximately the same likelihood of exposure to a pathogen. This may be because they share a common environment (e.g. animals in a pen), or because of common management practices. Usually, this is a herd or a flock. However, an epidemiological unit may also refer to groups such as animals belonging to residents of a village, or animals sharing a communal animal handling facility. The epidemiological relationship may differ from disease to disease, or even strain to strain of the pathogen.

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Exotic threats / pests and diseases - pests or diseases which are not usually present in the UK but which occur in other countries, posing a potential threat to UK honey bees.

Honey bee - A social, honey-making bee of the genus *Apis* which originated in tropical Asian regions.

Incidence - The number of cases of a disease which occur in a population in a given period of time

Integrated Pest Management (IPM) - is a term originally adopted to describe the development of pest control methods for fruit and cereal crops that do not rely on the regular and systematic use of pesticides. The approach is one of using non-invasive methods to prevent or at least minimise the risk of pest infestation. The main principles of IPM are monitoring, discouraging pests, modifying the environment and targeting treatments. The approach has considerable advantages regarding health and safety, being less harmful to both humans and the environment, and once established is also likely to be more cost effective than a passive or reactive approach.

Nosemosis - A bee disease caused by honey bee parasites (*Nosema apis* and *Nosema ceranae*).

Notifiable pest or disease – A pest or disease which must be reported (or “notified”) to the National Bee Unit or its inspectorate if a beekeeper suspects that it is present in his/her colonies.

OIE - Office International des Épizooties (World Organisation for Animal Health). The world organisation for animal health. It collects and publishes information on animal diseases (including those affecting honey bees) from 167 countries. To help control the spread of diseases it develops standards for health certificates for the international movement of animals.

Pollination – An important step in the reproduction of plants involving transfer of pollen grains from flower to flower and usually plant to plant by wind, water, or animals.

Queen bee - The only fertile female member of the colony. She can lay 1,500 or more eggs per day during her lifespan of 2–3 years. If a queen dies, the colony can produce a new queen from a worker egg.

Risk assessment - means the evaluation of the likelihood and the biological and economic consequences of entry, establishment, or spread of a pathogenic agent within the territory of an importing country.

Sentinel apiaries – apiaries which the National Bee Unit has identified with local beekeepers as high risk for regular monitoring in order to increase likelihood of spotting the arrival of exotic pests and diseases.

Small Hive Beetle (*Aethina tumida*) (commonly referred to as the 'SHB'), – while not thought to be present in the UK, this is a major threat to the long-term sustainability and economic prosperity of UK beekeeping. The beetle is indigenous to Africa, where it is considered a minor pest of honey bees, and until recently was thought to be restricted to that continent. However, in 1998 it was detected in Florida and it is now widespread in the USA.

Surveillance - means the investigation of a given population or subpopulation to detect the presence of a pathogenic agent or disease; the frequency and type of surveillance will be determined by the epidemiology of the pathogenic agent or disease, and the desired outputs.

***Tropilaelaps* species** - are serious mite parasites of honeybees. They are thought to be restricted to tropical or sub-tropical regions but their exact geographical range is unknown.

Varroa mite *Varroa destructor* - a parasite, accidentally introduced from Asia that became established in the UK and in many other countries. It continues to cause heavy mortality of bee colonies in some regions. The mite feeds externally on bee larvae and pupae within the brood combs as well as adult bees.